

**Remarks/Arguments**

**A. Claims in the Case**

Claims 1 – 20 are rejected. New claims 21 – 30 are added. Claims 1 – 30 are pending in the case.

**B. Specification**

The substitute specification filed March 22, 2002 was not entered because a statement pursuant to 37 CFR 1.125(b) and (c) that the substitute specification did not incorporate new matter was not made.

Applicant submits herewith a clean version (substitute sheets) and strikethrough version showing the changes made of pages 1 – 24 of the specification pursuant to 37 C.F.R. § 1.125 (b)(1) and (c). Applicant further states that the substitute sheets submitted herewith do not incorporate new matter.

**C. The Claims Are Not Anticipated by Mages Pursuant to 35 U.S.C. § 102**

The Examiner rejected claim 1, 6 – 8, 10 – 11, 13 – 15 and 19 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No.: 6,463,467 granted to Mages et al. (hereinafter referred to as Mages). Applicant respectfully disagrees with these rejections.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Claim 1 recites a combination of features that includes:

a digital versatile disc having a first file which stores video and audio information and a second file which stores playback control information for the information in the first file, the information being normally unable to be played back from said versatile disc.”

Mages does not appear to teach the combination of features found in claim 1, including but not limited to the feature “a digital versatile disc having a first file which stores video and audio information and a second file which stores playback control information for the information in the first file.” Rather, Mages appears to teach digitized video and/or audio files that are stored on a CD-ROM in a crippled fashion, but does not teach the feature of a second file that controls playback information for the information in the first file. For example, Mages specification recites:

Referring now to FIGS. 5-7, video images and/or audio are converted from analog to digital and stored in crippled fashion in digitized format (block 10) on CD-ROM 3. The crippling of the CD-ROM is achieved by removing critical information such as the video-audio header, whereupon such video/audio data is rendered unreadable by the end-user's computer. The "HyperCD" 3 is provided with the URL (web page) of the designated host computer, or server, (block 14), such, as for example: <http://tekweb.com/hypercd/adver/lotto.html>, which may be used on the CD-ROM for the Illinois Instant Lottery video advertising. Such digitized format may be existing computer memory files (block 12) that are already in binary format, or may be original files originated by recording the video and/or audio, as by a camcorder or tape, etc., and converting the analog signals into digital, or binary, code. (Mages, Col. 6, lines 48 – 63).

Applicant's claim 1 and associated dependent claims are directed toward a system comprising a combination that includes a digital versatile disc that stores digital and audio

information in a first file, and playback control information in a second file. Mages does not appear to teach or suggest a digital versatile disc that stores digital and audio information in a first file, and playback control information in a second file. For at least this reason, Applicant submits that the claims 1, 6 – 8, 10 – 11, 13 – 15, 17, 19 and new claims 21-40 are patentable over Mages pursuant to 35 U.S.C. §102(e) and respectfully requests the withdrawal of the rejections on these grounds.

C. **The Claims Are Not Obvious Under 35 U.S.C. § 103**

Claims 2 – 4, 9 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Mages in view of U. S. Patent No. 5,909,589 granted to Parker et al (hereinafter referred to as “Parker”). The Examiner asserts that Mages teaches all the features of claim2, but does not specifically teach the particulars of the first server. Applicant respectfully disagrees with these rejections.

In order to reject a claim as obvious, the Examiner has the burden of establishing a *prima facie* case of obviousness. *In re Warner et al.*, 379 F.2d 1011, 154 USPQ 173, 177-178 (CCPA 1967). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974), MPEP § 2143.03.

For at least the same reasons cited above, Applicant submits that Mages fails to teach all the features of claim 2, including but not limited to the feature of “a digital versatile disc having a first file which stores video and audio information and a second file which stores playback control information for the information in the first file.”

Moreover, claim 2 recites a combination of features that includes:

server comprises first and second servers,  
said server having a database in which a pair of identification information of a student who learns a subject using said terminal and progress information of the subject are registered, and having a first memory which stores contents of each page of the subject,  
said second server having a second memory in which a pair of the repair information and playback control instruction information for said digital versatile disc are registered in relation to playback designation information output when said terminal sends the playback request, and  
said first server transmitting page contents of said first memory designated by the progress information corresponding to the identification information of the student in said database and causing said terminal to display the contents at the time of learning by the student, and upon receiving the playback designation information output when said terminal sends the playback request, outputting the playback designation information to said second server and causing said second server to transmit, to said terminal, the repair information corresponding to the playback designation information and the playback control information for said digital versatile disc in said second memory, thereby allowing said terminal to play back the information in said digital versatile disc.

Applicant submits that the teachings of Parker, while appearing to disclose synchronizing local data and server data, appear to be directed predominantly to data stored on the CD-ROM, rather than stored on the server. For example, Parker recites:

Turning now to FIG. 3C, from connector C, the routine proceeds to step 250 where the student uses the material supplied on the CD-ROM in completing his or her course work. The processes involved in step 250 are described in more detail in FIG. 4. From step 250, the routine checks to see if the student has completed his or her session in step 252. If not, the student is allowed to continue studying in step 250. Alternatively, in the event that the student is done with the session in step 252, the routine proceeds to step 254 where it reconnects to the server 80 or 84 over the Internet 50.

From step 254, the routine of FIG. 3C then synchronizes its files and reports its results to the database stored in the server 80 or 84. From step 256, the routine checks to see if the student has completed the course materials supplied on the CD-ROM 250. If so, the routine prepares the final report and sends the report to an accrediting institution in step 260. Alternatively, in the event that the course has not been completed in step 258, or in the event that the course was completed and the final report was prepared and sent to the proper authorities in step 260, the routine proceeds to step 262 where it detaches from the server 80 or 84 before it exits the training process in step 264. (Parker, Col. 9, line 63 – Col. 10, line 18).

Applicant submits that Parker fails to teach the feature of a first server transmitting page contents of said first memory designated by the progress information corresponding to the identification information of the student in said database and causing said terminal to display the contents at the time of learning by the student, and upon receiving the playback designation information output when said terminal sends the playback request, outputting the playback designation information to said second server and causing said second server to transmit, to said terminal, the repair information corresponding to the playback designation information and the playback control information for said digital versatile disc in said second memory, thereby allowing said terminal to play back the information in said digital versatile disc.

The Examiner rejected claim 4 as being obvious over the combination of Mages and Parker. Specifically, the Examiner asserts that column 7, lines 2 – 8 of Mages teaches Applicant's claimed feature of said second server causes said terminal to acquire said second playback control means in accordance with authentication information of said terminal, which is output from said first server when said terminal sends the playback request for the information in said digital versatile disc, and said second playback control means acquired by said terminal transmits the playback designation information to said first playback control means. Applicant respectfully disagrees with this rejection. The cited section of Mages recites:

By means of the process performed in block 14, the CD-ROM contains a code representing the URL web page of the host computer where the necessary decippling key is located. This data on the CD-ROM 3 will automatically call up and connect the end-user's computer to the host computer's server 7 on the Internet, whereby a socket-to-socket connection is made therebetween (block 18). (mages, Col. 7, lines 2 – 8).

Applicant asserts that Mages fails to teach or suggest the acquisition of a second playback control means by the terminal. Rather, Mages teaches that a CD-ROM contains a code representing the URL web page of the host computer where the necessary decippling key is located and that the CD-ROM will automatically up and connect to the end-user's computer to the host computer.

For at least the reason cited above, Applicant submits that the combination of Mages and Parker fail to teach or suggest the combination of features of claim 1 – 20. Applicant asserts that the claims are patentable over the cited art under 35 U.S.C. § 103(a) and respectfully requests the withdrawal of the rejections on these grounds.

**D. SUMMARY**

Based on the above, Applicant submits that the claims are now in condition for allowance. Favorable reconsideration is respectfully requested.

Applicant encloses herewith a Fee Authorization in the amount of \$446.00 to cover the cost of one independent claim in excess of three, and 20 claims in excess of twenty. Applicant believes that no extension of time is due with this response. If any extension of time is required, Applicant hereby requests the appropriate extension of time. Should any other fees be required, or if any fees have been overpaid, the Commissioner is authorized to appropriately charge or credit those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel Deposit Account No. 50-1505/5664-00200/EBM

Respectfully submitted,



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~~Specification~~

~~Title of the Invention~~

~~Service System~~

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5 Background of the Invention

The present invention relates to a service system using a DVD (Digital Versatile Disc).

A learning system using the Internet is known as a service system of this type.

10 In this learning system, a CD-ROM (Compact Disc ROM) is distributed as a teaching material, and corrections/lessons, questions and answers, and learning result management based on the distributed teaching material are done through the Internet.

15 A student inserts the purchased CD-ROM to his/her personal computer (to be referred to as a PC hereinafter) to connect it to the Internet and access a corresponding web server on the Internet. Information stored in the CD-ROM is played back in accordance with  
20 an instruction from the server side, and the playback information is displayed on the PC. On the basis of the playback information, individual learning such as questions and answers or corrections/lessons is done.

The CD-ROM used in such a learning system can  
25 store only a limited amount of information because of its small storage capacity. Since no sufficient learning effect is obtained, use of a DVD (Digital

Versatile Disc) having a large storage capacity as the teaching material of the learning system has been examined.

#### Summary of the Invention

5                   It is therefore an object of the present invention to make it possible to use a DVD in a service system such as a learning system.

~~In The preferred embodiment order to achieve the above object, according to the present invention,~~  
10 ~~there is provided~~ a service system which  
includes~~comprising~~ a digital versatile disc having a first file which stores video and audio information and a second file which stores playback control information for the information in the first file, the information  
15 being normally unable to be played back from the digital versatile disc, a terminal connected to a network and adapted to receive the digital versatile disc, and a server arranged in the network and having repair information which can repair the information in the  
20 digital versatile disc, the server returning the repair information to the terminal and causing the terminal to play back the information from the digital versatile disc upon receiving a playback request for the information in the digital versatile disc from the  
25 terminal when the terminal uses the digital versatile disc.

#### Brief Description of the Drawings

Fig. 1 is a block diagram showing a service system according to the first embodiment ~~of the present invention~~;

Figs. 2A to 2C are block diagrams of the servers and PC of the service system;

Figs. 3A to 3C are views for explaining the software configuration of the PC and servers;

Fig. 4 is a sequence chart showing operations of the respective sections of the system shown in Fig. 1;

Fig. 5 is a sequence chart showing operations of the respective sections of the system shown in Fig. 1;

Fig. 6 is a sequence chart showing operations of the respective sections of the system shown in Fig. 1;

Figs. 7A to 7E are views showing formats of a DVD inserted to the PC;

Fig. 8 is a block diagram showing a service system according to the fourth embodiment; and

Fig. 9 is a block diagram showing a service system according to the fifth embodiment.

#### Description of the Preferred Embodiments

The present invention will be described below with reference to the accompanying drawings.

Fig. 1 shows a service system according to the first embodiment ~~of the present invention~~, which uses a

DVD. The service system is applied to a learning system using the Internet.

Referring to Fig. 1, in this learning system, servers 1 and 2 are arranged on the Internet 5. The  
5 server 1 accommodates a database 3 which stores various kinds of information and also stores textbooks prepared by teachers. The server 2 controls playback of a DVD (Digital Versatile Disc) (to be described later).

A client PC (to be referred to as a PC  
10 hereinafter) 7 as a terminal used by a student is connected to the Internet 5. A DVD 8 as a teaching material for the student, which stores video information and audio information, is inserted into the PC 7.

Figs. 2A to 2C show the hardware  
15 configurations of the servers 2 and 1, database 3, and PC 7 of the learning system.

The server 2 ~~includes~~comprises a control  
section 21 formed from a CPU or the like, a memory 22  
for storing software to be executed by the memory 22 and  
20 various data, and a communication I/F 23 for transmitting information through the Internet 5, as shown in Fig. 2A.

The server 1 has a control section 11, memory  
12, and communication I/F 13, as shown in Fig. 2B, and  
25 is connected to the database 3 having a student information database 3A and progress/playback information database 3B (to be described later).

The PC 7 ~~includes~~comprises a control section 71, memory 72, DVD I/F 73, communication I/F 74, display section 75, and operation section 76 such as a keyboard, as shown in Fig. 2C.

5           The DVD 8 has a format ~~comprised of~~which includes a VMG (Video Manager), VTS (Video Title Set) #1 to #n, and MPEG2 program stream, as shown in Fig. 7A. The MPEG2 program stream is video and audio stream data and is called a VOB (Video OBject) file. The VMG and  
10 VTS #1 to #n are called an IFO file which stores control information for ~~an~~ access to the VOB file. Such IFO file and VOB file are designated by extensions of DVD-Video.

          In the first embodiment of the service  
15 system~~present invention~~, the incomplete DVD 8 in which the IFO file is partially or entirely erased (or destroyed), or the header of the VOB file is erased (or destroyed), is distributed to the student side for pay. The DVD 8 cannot be played back by a normal player and  
20 can be played back in accordance with repair information from the server side, as will be described later.

The software configuration of each section of the learning system will be described next.

          As software executed by the control section 71  
25 of the PC 7 used by the student, an Internet browser used to browse homepages (web pages to be described later) in each server on the Internet 5 is stored in the

memory 72. Additionally, playback assistant software 7A,  
playback object 7B, and DVD player 7C shown in Fig. 3A,  
which are used to play back information in the DVD 8,  
are installed in the memory 72. The playback assistant  
5 software 7A has a repair function for the erased or  
destroyed IFO and VOB files of the DVD 8. The playback  
object 7B has a function of transferring repair  
information to the playback assistant software 7A and  
causing it to repair the erased (destroyed) portion of  
10 the file of the DVD 8 in accordance with an instruction  
from the server 2 upon executing the Internet browser  
and also displaying the playback information in the DVD  
8 on the display section 75. The DVD player 7C has a  
function of playing back the information in the DVD 8 on  
15 the basis of an instruction from the playback object 7B.

The memory 12 of the server 1 has a web page  
1B, as shown in Fig. 3B. The web page 1B stores  
textbooks prepared by teachers. A textbook stored in  
the web page 1B is loaded into the PC 7 by executing the  
20 Internet browser in the PC 7 and displayed on the  
display section 75 of the PC 7.

The database 3 connected to the server 1 has  
the above-described student information database 3A and  
progress/playback information database 3B. The student  
25 information database 3A has a table in which the  
identification information (ID) of each student and the  
progress page of each subject (progress page of each

textbook) are registered in association with each other.  
The progress/playback information database 3B has a  
table in which the progress page of each subject and a  
playback clip name are registered in association with  
5 each other, and a table in which a textbook page in the  
web page 1B and a playback position in the DVD 8 are  
registered in association with each other.

As software executed by the control section 11  
of the server 1, a security gate 1A shown in Fig. 3B is  
10 prepared. The security gate 1A has a function of  
inhibiting the PC 7 from browsing an impermissible  
textbook page in the web page 1B and also a function of  
transmitting an appropriate page content of a textbook  
in the web page 1B to the PC 7.

15 ~~As the software executed by the control~~  
section 21 of the server 2, a server-side playback  
control object 2A and client-side playback control  
object 2B as shown in Fig. 3C are prepared. The  
server-side playback control object 2A is executed by  
20 the control section 21 and has a function of  
transferring the repair information for the DVD 8 and  
the playback control information (playback start  
information) of the DVD 8 to the client-side playback  
control object 2B. The client-side playback control  
25 object 2B is software loaded into the PC 7 and executed  
in accordance with a web page instruction upon executing  
the Internet browser in the PC 7, and has a function of

receiving the repair information for the DVD 8 from the server-side playback control object 2A and transferring the repair information to the playback object 7B of the PC 7 on the basis of the web page instruction.

5                   The memory 22 of the server 2 stores pieces of repair information 2C including the repair information of the IFO file and that of the VOB file of the DVD 8 and also has a database 2D in which a playback clip name and playback position information of the DVD 8 are  
10 registered in correspondence with each of the pieces of stored repair information 2C.

Operation of the learning system with the above arrangement will be described with reference to the sequence charts shown in Figs. 4 to 6.—~~Operation shown in the sequence chart of Fig. 4 will be described first.~~

Prior to the student's learning using the Internet, the server 1 transmits its authentication information to the server 2 in advance (step S1). The  
20 server 2 authenticates the server 1 and registers it in the memory 22 (step S2), sends a registration completion notification to the server 1, and also transmits the playback information (information formed from each page of each subject and a corresponding playback clip name)  
25 of the DVD 8 stored in the memory 22 to the server 1 (step S3). The server 1 receives the playback information and registers and saves it in the table of

the progress/playback information database 3B (step S4).

After such preprocessing, when the student connects his/her PC 7 to the Internet 5 to log in to the server 1 (step S5), the student number (student ID) and password of the student are transmitted to the server 1 (step S6). In this case, the server 1 determines whether the received student number and password are registered in the student information database 3A, and if it is, determines that the student is an authentic student (step S7).

After determining that the student is authentic, the server 1 transmits, to the PC 7, an initial page window where items (subjects) to be learned by the student are sequentially arranged on a window, and makes the display section 75 of the PC 7 display the window (step S8). The student selects a desired item from the initial page window displayed on the PC 7 (step S9). The selection information is transmitted to the server 1 (step S10). Upon receiving the selection information, the security gate 1A of the server 1 extracts the progress page of the item represented by the student number and selection information of the student by looking up the table in the student information database 3A (step S11), transmits, to the PC 7, a page content including image information represented by the progress page of the textbook of the corresponding item, which is stored in the web page 1B,

and causes the PC 7 to display the page content (step S12). When the contents of the progress page of the item selected by the student are displayed on the PC 7 as a window and audio data, the student side starts  
5 learning the selected subject (step S14). At this time, the student inserts the DVD 8 into the PC 7 (step S13).

The learning progresses as, e.g., the teacher side (i.e., server 1 side) puts a question about the contents of the subject displayed on the screen of the  
10 PC 7, and the student side (i.e., PC 7 side) answers the question. If the answer from the student side is correct, the security gate 1A of the server 1 allows progress to the next page. Consequently, the contents of the next page of the subject are sent from the server  
15 1 side to the PC 7 and displayed on the PC 7 as a window and audio data, so learning about the page contents progresses in a similar way. The learning of the selected item sequentially progresses in this way. When the learning is ended, the page of the textbook of the  
20 selected item under learning is registered as a progress page corresponding to the student number in the student information database 3A. Next time, the learning starts from the contents of that page.

When the student clicks on an omitted portion  
25 in the displayed window of the textbook page under learning in order to compensate for the omitted portion with the information of the DVD 8, a DVD playback

request is transmitted from the PC 7 to the server 1  
(step S15).

When the DVD playback request is transmitted  
from the PC 7, the server 1 notifies the server 2 of the  
5 PC authentication information of the student in step S16  
of Fig. 5. The server 2 recognizes that the request is  
from the server 1 that has already been authenticated  
and registered in step S2 of Fig. 4, and registers the  
PC authentication information of the student, which is  
10 transmitted from the server 1 (step S17). The server 2  
transmits, to the server 1, the URL (Uniform Resource  
Locator) location (address) in the server 2 of the  
client-side playback control object 2B as a student  
authentication registration completion notification  
15 (step S18).

Upon receiving the URL of the client-side  
playback control object 2B from the server 2, the server  
1 extracts a playback clip name corresponding to the DVD  
playback request transmitted from the PC 7 by looking up  
20 the progress/playback information database 3B in which  
the playback clip name transmitted from the server 2 in  
advance is saved, attaches the playback clip name as a  
parameter of the client-side playback control object 2B  
(step S19), and notifies the PC 7 of it as a playback  
25 page (step S20). The PC 7 requests the server 2 to  
acquire the client-side playback control object 2B in  
accordance with the description in the transmitted

5 playback page (steps S21 and S22). The PC 7 side  
acquires the client-side playback control object 2B.  
The acquired client-side playback control object 2B is  
called a volatile playback control object because it is  
used only when the playback information of the DVD 8 is  
to be displayed at a position corresponding to the  
playback clip name of the textbook page, and a new  
playback control object must be acquired to display the  
playback information of the DVD 8 at a position  
10 corresponding to a new playback clip name.

The PC 7 acquires the client-side playback  
control object 2B from the server 2 and then activates  
the playback object 7B (step S23). By executing the  
acquired client-side playback control object 2B, the PC  
15 7 loads the playback clip name attached to the object 2B  
as a parameter (step S24). The loaded playback clip  
name is sent to the server 2 (step S25).

When the playback clip name is sent, the  
server 2 executes the server-side playback control  
20 object 2A (step S26), receives the playback clip name,  
extracts, e.g., the repair IFO information 2C  
corresponding to the playback clip name from the memory  
22 by looking up the database 2D, and sends the repair  
information to the PC 7 side (step S27). The PC 7  
25 performs the following processing in step S28.

The PC 7 executes the acquired client-side  
playback control object 2B to acquire the repair IFO

information from the server 2, and transfers the  
information to the playback object 7B. The playback  
object 7B transfers the repair IFO information to the  
playback assistant software 7A. The playback assistant  
5 software 7A registers the repair IFO information and  
transmits a registration completion notification to the  
playback object 7B. The repair IFO information  
registration completion notification is further  
transmitted from the playback object 7B to the  
10 client-side playback control object 2B.

Upon receiving the repair IFO information  
registration completion notification from the playback  
object 7B, the client-side playback control object 2B  
transmits the registration completion notification to  
15 the server-side playback control object 2A of the server  
2 (step S29).

When notified of the repair IFO information  
registration completion notification, in step S30 of Fig.  
6, the server-side playback control object 2A of the  
20 server 2 transmits, to the PC 7, the playback position  
information of the DVD 8 in the database 2D, which  
corresponds to the playback clip name received in step  
S25 of Fig. 7, as playback control instruction  
information (playback start instruction information) to  
25 be executed by the playback object 7B of the PC 7 (step  
S31).

When the playback control instruction

information is transmitted from the server 2 to the PC 7,  
the PC 7 performs the following processing in step S32.  
The client-side playback control object 2B is executed  
to acquire the playback control instruction information  
5 from the server 2, the acquired information is  
transferred to the playback object 7B, the playback  
object 7B instructs the DVD player 7C and playback  
assistant software 7A to play back the DVD 8, and the  
playback control instruction information is transferred  
10 to the playback assistant software 7A. In starting  
playing back the DVD 8, the DVD player 7C plays back the  
incomplete IFO file of the DVD 8.

When the DVD player 7C plays back the  
incomplete IFO file of the DVD 8, the playback assistant  
15 software 7A converts the playback information into  
information repairable in accordance with the playback  
control instruction information and the registered  
repair IFO information (step S33) and sends the  
information to the playback object 7B. The playback  
20 object 7B recognizes the incomplete IFO file as a normal  
IFO file and subsequently executes playback processing  
to display a video signal played back next to the IFO  
file by the DVD player 7C at the omitted portion of the  
display window on the display section 75 (step S34).  
25 The learning is continued as the video signal  
corresponding to the omitted portion of the display  
window is played back and displayed.

When the page is completely learned, learning of the next page starts, and an omitted portion in the display window for the page need be compensated for by the information of the DVD 8, the student clicks on the omitted portion, as described above. The flow returns to step S15 in Fig. 5. A DVD playback request is sent from the PC 7 to the server 1, and the processing steps from step S16 of Fig. 5 and the processing steps in Fig. 6 are executed again. In this case, the PC 7 acquires a client-side playback control object for playing back the omitted portion of the new page from the DVD 8, which is different from the preceding client-side playback control object. By executing this new client-side playback control object, playback processing of playing back a video signal in the DVD 8 and displaying the signal at the omitted portion of the display window on the display section 75 is performed (step S34).

When the learning of the pages of the selected subjects sequentially progresses, and the student ends the learning on the PC 7 (step S35), a learning completion notification is sent to the server 1 (step S36). Upon receiving the learning completion notification, the server 1 accesses the progress/playback information database 3B in the database 3 to update progress information (page of the selected subject) corresponding to the student number (step S37), and the processing is ended.

As described above, this learning system makes it possible to use the DVD 8 having a large storage capacity as a teaching material. As a result, a sufficient learning effect can be obtained. In addition, before the DVD 8 is provided to the student side, the IFO file of the DVD 8 is erased (or destroyed) in advance such that the DVD 8 is provided in an incomplete form. When the student uses the DVD 8, repair IFO information is transmitted from the server side, so the information of the DVD 8 can be played back in accordance with the repair IFO information. Hence, since the DVD 8 which is distributed to the student, e.g., for pay, it cannot be played back by a normal player, any illicit use of the DVD 8 by a third party can be prevented, and the provider who provides this system can be prevented from suffering loss.

In the above-described first embodiment, the playback assistant software 7A and playback object 7B are installed in the PC 7 in advance. However, the playback assistant software 7A and playback object 7B may be downloaded from the server 1 and stored in the memory of the PC 7 when the DVD 8 is set in the PC 7. Alternatively, the playback assistant software 7A and playback object 7B may be stored in the DVD 8, and when the DVD 8 is inserted into the PC 7, the server 1 may send an instruction to the PC 7, and the PC 7 may load the playback assistant software 7A and playback object

7B from the DVD 8 and store them in the memory in accordance with the instruction.

In the first embodiment, an omitted portion in the display window of a textbook page is displayed in accordance with information played back from the DVD 8. The playback information includes not only a video signal but also an audio signal. In addition, one page of a textbook may be played back from the DVD 8 and displayed on the PC 7.

10 In the sequence charts shown in Figs. 4 to 6, an incomplete IFO file that is erased or destroyed is repaired to a complete IFO file, and video data in the subsequent VOB file is played back and displayed on the PC 7. Modifications ~~which~~that inhibit playback of a DVD 8 will be described as the second embodiment.

As the first modification, the header field of the VOB file may be erased (or destroyed) in advance to make the file incomplete, as described above, and the header field may be repaired to play back the video signal in the subsequent VOB file and display it on a PC 7. Alternatively, the video signal or the like in the VOB file of the DVD 8 may be erased (or destroyed) in advance to make the file incomplete, and this portion may be repaired by the repair information from the server side and displayed on the PC 7.

As the second modification, the IFO file of the DVD 8 may be wholly erased (all data are "0"; the

file size is the same as that of a normal file). When a playback request for the DVD 8 is received from the PC 7, the IFO file may be sent from the server side to the PC 7 as repair information, and the PC 7 may play back the VOB file of the DVD 8 on the basis of the IFO file.

As the third modification, the IFO file of the DVD 8 may be formed as a file having a size "0", and the IFO file may be repaired to a normal file by repair information from the server side.

As the fourth modification, only the VOB file may be stored in the DVD 8 in advance. When a playback request for the DVD 8 is received from the PC 7, the IFO file may be sent from the server side to the PC 7, and the PC 7 may play back the VOB file of the DVD 8 on the basis of the IFO file.

As the fifth modification, the physical layout in the IFO file of the DVD 8 may be changed, and the PC 7 may repair the IFO file to a normal file in accordance with repair information from the server side and play back the VOB file of the DVD 8 on the basis of the IFO file.

More specifically, as the physical layout in the IFO file of the DVD 8, for example, ① VIDEO\_TS.IFO to ⑥ VTS\_01\_0.IFO are normally laid out as shown in Fig. 7B.

In this case, for example, ⑥ VTS\_01\_0.IFO and ① VIDEO\_TS.IFO may be exchanged to form an abnormal

file, and the IFO file may be repaired to a normal file by repair information from the server side such that the video data in the VOB file can be played back. In this case, the VOB file may have an abnormal physical layout,  
5 or both the VOB file and the IFO file may have abnormal layouts.

As the sixth modification, the DVD 8 is designed such that at least one of the IFO and VOB files is not placed under the VIDEO\_TS directory.

10 More specifically, the DVD 8 normally has a logic structure as shown in Fig. 7C, in which the IFO and VOB files such as VIDEO\_TS.IFO and VIDEO\_TS.VOB are placed under the VIDEO\_TS directory. In this case, the logic structure of the DVD 8 may be changed such that  
15 the IFO file or VOB file is not placed under the VIDEO\_TS directory, and the structure may be repaired to a normal logic format by repair information from the server side. With this processing, the PC 7 can play back the information in the VOB file.

20 As the seventh modification, the IFO file name or VOB file name such as VIDEO\_TS.IFO or VIDEO\_TS.VOB located under the VIDEO\_TS directory may be changed to an impossible file name such as XXXX.YYY, and the name may be repaired to a normal file name by repair  
25 information from the server side.

As the eighth modification, file system information (File Set Descriptor, File Identifier

Descriptor, File Entry, ICB, and the like) may be partially or entirely erased from the DVD 8, and the information may be repaired to a normal file name by repair information from the server side.

5                   More specifically, VIDEO\_TS.IFO, VIDEO\_TS.VOB, and VIDEO\_TS.BUP shown in Fig. 7D are regarded as the file system information. When data corresponding to these pieces of file system information are independently stored, and a piece of file system  
10 information is erased, data corresponding to the file system information cannot be played back. In this case, when normal file system information is transmitted for the server side to the PC 7, the PC 7 can play back the information in the DVD 8.

15                   As the ninth modification, the IFO and VOB files of the DVD 8 may be created as the DVD standard, and all video images in the DVD 8 may be played back in accordance with repair information (new IFO information) from the server side.

20                   More specifically, for the DVD 8, normally, the IFO file and the VOB file corresponding to data A are created as the DVD standard, as shown in Fig. 7E. When a playback request for such a DVD 8 is received from the PC 7, the server side sends a new IFO file to  
25 the PC 7. The PC 7 can play back information in a VOB-1 file corresponding to data B in Fig. 7E by the new IFO file and consequently play back all VOB files (VOB-2

file) of the DVD 8.

Of the above-described first to ninth modifications that inhibit playback of video data in the DVD 8, the fifth to eighth modifications can be combined  
5 with other modifications except the ninth modification.

As described above, the DVD 8 that cannot be played back by a normal player is provided to the user, and when the DVD 8 is set in the PC 7, and a playback request is sent from the PC 7, the server side transmits  
10 repair information for the DVD 8 to the PC 7 to allow the PC 7 to play back the DVD 8.

Such a DVD 8 is provided to the user (student side) by a provider who provides this system, as described above. The system provider must appropriately  
15 charge the user for use of the DVD 8. In the third embodiment, charging methods will be described.

As the first charging method, the user is charged in units of DVDs.

As the second charging method, the server use  
20 charge (per month or year) is collected from the user.

As the third charging method, the user is charged every time the DVD is played back (i.e., for each access to the server).

As the fourth charging method, the user is  
25 charged when he/she accesses the server, and after that, the video information in the DVD is played back for the user (prepayment).

As the fifth charging method, a content such as an advertisement is inserted into the DVD 8, and the advertiser is charged.

As the sixth charging method, playback  
5 assistant software 7A and playback object 7B are stored in each DVD, as described above, and a license fee is collected at the time of sale or distribution of each DVD.

As the seventh charging method, a person who  
10 has developed DVD software to be used in this system is charged.

As the eighth charging method, the system provider causes a third party to operate the server and collects a software license fee from the third party.

15 When the above charging methods are employed, the system provider can operate the system without suffering loss.

Fig. 8 shows the fourth embodiment of the service system~~present invention~~. In the first  
20 embodiment shown in Fig. 1, the servers 1 and 2 are prepared. However, as shown in Fig. 8, one server 2 may be commonly used by a plurality of servers 1a to 1c. With this arrangement, the plurality of servers can be unitarily managed by the single server 2. In this case,  
25 the servers 1a to 1c may be in charge of different subjects, or the servers 1a to 1c may function as schools.

Alternatively, as in the fifth embodiment shown in Fig. 9, servers 1 and 2 may be integrated into a single server 9 and servers 9a to 9c may be connected to databases 3a to 3c, respectively. In this case, the  
5 servers 9a to 9c may be in charge of different subjects, or the servers 9a to 9c may function as schools.

As has been described above, ~~according to the present invention,~~ the service system has a DVD having a first file (VOB file) which stores video and audio  
10 information and a second file (IFO file) which stores playback control information for the information in the first file, the information being normally unable to be played back from the DVD, a PC connected to the Internet and adapted to receive the DVD, and a server arranged in  
15 the Internet and having repair information which repairs the information in the DVD whose information cannot be played back. Upon receiving a playback request for the information in the DVD from the PC, the server returns the repair information to the PC and causes it to play  
20 back the information from the DVD. When this system is applied to a learning system, the digital versatile disc 8 having a large storage capacity can be used as a teaching material, and consequently, sufficient learning effect can be obtained. In addition, since the  
25 information in the DVD which is distributed to the student side, e.g., for pay, it cannot be played back by a normal player, any illicit use of the DVD by a third

party can be prevented, and the provider who provides this system can be prevented from suffering loss.

Further modifications and alternative embodiments of various aspects of the invention will be apparent to those skilled in the art in view of this description. Accordingly, this description is to be construed as illustrative only and is for the purpose of teaching those skilled in the art the general manner of carrying out the invention. It is to be understood that the forms of the invention shown and described herein are to be taken as the presently preferred embodiments. Elements and materials may be substituted for those illustrated and described herein, parts and processes may be reversed, and certain features of the invention may be utilized independently, all as would be apparent to one skilled in the art after having the benefit of this description of the invention. Changes may be made in the elements described herein without departing from the spirit and scope of the invention as described in the following claims.